In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Previously Presented) A method of providing data processor emulation information, comprising:

providing a program counter trace stream of program counter values used by a data processor;

inserting a synchronization marker into the program counter trace stream; and

providing trace information indicative of each data processing operation performed by the data processor, including identifying a program counter value that corresponds to the data processing operation, said identifying step including expressing said corresponding program counter value as an offset which indicates a number of program counter values in the program counter trace stream by which said corresponding program counter value is offset from said synchronization marker in said program counter trace stream.

Claims 2 and 3. (Canceled)

4. (Previously Presented) The method of Claim 1, wherein:

said identifying step includes detecting occurrences of program counter loads in the data processor; and

said identifying step includes counting detected occurrences of program counter loads.

5. (Original) The method of Claim 4, wherein said identifying step includes maintaining a running count of a number of program counter loads that have occurred since insertion of the synchronization marker.

Claims 6 to 12. (Canceled)

13. (Previously Presented) An apparatus for providing data processor emulation information, comprising:

first and second inputs for coupling to a data processor;

a trace stream generator coupled to said first input for providing a program counter trace stream of program counter values used by the data processor, said trace stream generator operable for inserting a synchronization marker into the program counter trace stream; and

a trace apparatus coupled to said second input for providing trace information indicative of each data processing operation performed by the data processor, including a program counter identifier for identifying a program counter value that corresponds to said data processing operation, said program counter identifier operable for expressing said corresponding program counter value as an offset which indicates a number of program counter values in the program counter trace stream by which said corresponding program counter value is offset from said synchronization marker in said program counter trace stream.

Claim 14. (Canceled)

15. (Previously Presented) The apparatus of Claim 13, wherein:

said program counter identifier is responsive to information received from the data processor for detecting occurrences of program counter loads in the data processor; and

said program counter identifier includes a counter for counting detected occurrences of program counter loads.

16. (Original) The apparatus of Claim 15, wherein said counter is operable for maintaining a running count of a number of program counter loads that have occurred since insertion of the synchronization marker.

Claims 17 to 22. (Canceled)

23. (Original) An integrated circuit, comprising:

a data processor for performing a data processing operation; and

an apparatus coupled to said data processor for providing emulation information about said data processing operation, including a trace stream generator for providing a program counter trace stream of program counter values used by said data processor, said trace stream generator operable for inserting a synchronization marker into the program counter trace stream, and a trace apparatus for providing trace information indicative of said data processing operation, said trace apparatus including a program counter identifier for identifying a program counter value that corresponds to said data processing operation, said program counter identifier operable for expressing said corresponding program counter value as an offset which indicates a number of program counter values in the program counter trace stream by which said corresponding program counter value is offset from said synchronization marker in said program counter trace stream.

24. (Original) A data processing system, comprising:

an integrated circuit, including a data processor for performing a data processing operation;

an emulation controller coupled to said integrated circuit for controlling emulation operations of said data processor; and

said integrated circuit including an apparatus coupled between said data processor and said emulation controller for providing emulation information about said data processing operation, said apparatus including a trace stream generator for providing a program counter trace stream of program counter values used by said data processor, said trace stream generator operable for inserting a synchronization marker into the program counter trace stream, and said apparatus further including a trace apparatus for providing trace information indicative of said data processing operation, said trace apparatus including a program counter identifier for identifying a program counter value that corresponds to said data processing operation, said program counter identifier operable for expressing said corresponding program counter value as an offset which indicates a number of program counter values in the program counter trace stream by which said corresponding program counter value is offset from said synchronization marker in said program counter trace stream.

Claims 25 and 26. (Canceled)

27. (Previously Presented) The integrated circuit of Claim 23, wherein:

said program counter identifier is responsive to information received from the data processor for detecting occurrences of program counter loads in the data processor; and

said program counter identifier includes a counter for counting detected occurrences of program counter loads.

28. (Previously Presented) The integrated circuit of Claim 27, wherein:

said counter is operable for maintaining a running count of a number of program counter loads that have occurred since insertion of the synchronization marker.

29. (Previously Presented) The data processing system of Claim 24, wherein:

said program counter identifier is responsive to information received from the data processor for detecting occurrences of program counter loads in the data processor; and

said program counter identifier includes a counter for counting detected occurrences of program counter loads.

30. (Previously Presented) The data processing system of Claim 29, wherein:

said counter is operable for maintaining a running count of a number of program counter loads that have occurred since insertion of the synchronization marker.